epiTRENDS
A Monthly Bulletin on Epidemiology and Public Health Practice in Washington State

Identifying Noroviral Outbreaks and Controlling Transmission of a Highly Contagious Pathogen

Vol. 10 No. 1
1.05

Most people experience it at least once a year — a gastrointestinal infection typically lasting from one to two days. Although commonly referred to as "stomach flu," these infections are generally due to other viruses and are not influenza. Common agents involved are noroviruses, highly contagious viruses that have caused outbreaks of vomiting and diarrhea on cruise ships, at camps or health care facilities, and through restaurants and other community settings.

During November and December 2004, the Washington State Department of Health Communicable Disease Epidemiology Section received notifications of 24 outbreaks of viral gastroenteritis affecting more than 475 people. Six different counties in both the western and eastern parts of the state reported outbreaks. They occurred in a variety of settings including a food service establishment, private party, health care facility, assisted living facility, school, and childcare facility.

The clinical and epidemiologic characteristics (incubation period, symptoms, duration of illness) of these outbreaks were consistent with norovirus infection. Norovirus was detected in stool specimens from seven of the 10 outbreaks for which specimens were submitted for testing. Of these 24 norovirus-like outbreaks, 7 (29%) likely resulted from contaminated food and 17 (71%) likely resulted entirely from person-to-person spread.

Noroviruses

Noroviruses, previously known as "Norwalk-like viruses," are a group of related viruses that cause acute gastroenteritis. Other terms that have been used for this group are caliciviruses and small round structured viruses (SRSVs).

The usual incubation period for norovirus-associated gastroenteritis in humans is 24 to 48 hours (median in outbreaks is 33 to 36 hours), but cases can occur within 12 hours of exposure. Symptoms usually include acute vomiting (more common in children), watery non-bloody diarrhea with abdominal cramps, and nausea. Low-grade fever may occur. Dehydration is the most common complication, especially among the young and elderly, and may require medical attention. Duration of illness is usually 12 to 60 hours. Few people are severely ill and there are no serious long-term complications.

Virus Transmission

Noroviruses are transmitted primarily through the fecal-oral route, either by consumption of contaminated food or water or directly person to person. Good evidence exists for transmission due to aerosolization of vomitus or contamination of food or water with vomitus. Other sources of infection are the environment, including contaminated objects.

Noroviruses are highly contagious and secondary transmission is common during outbreaks. It is thought that an inoculum of as few as 10 viral particles may be sufficient to cause infection. Shedding of virus usually begins with onset of symptoms and may

Continued page 2

Washington State Department of Health

*epi*TRENDS
P.O. Box 47812
Olympia, WA 98504-7812

continue for two weeks after recovery, although highest communicability is during the first 72 hours. Stool may have millions of viral particles per gram.

Diagnosis and Management of Norovirus Infections

Reverse transcriptase polymerase chain reaction (RT-PCR) can be used to test stool and emesis samples. Identification from stool specimens is highest within 48 to 72 hours after onset of symptoms, although good results can be obtained using samples taken as long as five days after symptom onset. Symptomatic therapy consists of oral or intravenous rehydration. Since there is no specific therapy other than treating symptoms, RT-PCR for norovirus is generally used only to confirm the diagnosis in outbreaks.

Outbreak Investigation

When a local health jurisdiction investigates a suspected norovirus outbreak, the first step is to gather information on each person ill with gastrointestinal symptoms, including likely exposures (e.g., the location of the person in a facility, food history), the symptoms reported, and the dates and times of symptom onset and resolution. In addition, information should be collected on the total number of persons exposed in the same facility or during the same event.

Clinical and epidemiologic signs suggesting a norovirus outbreak of gastroenteritis include:

1. average duration of illness: 12 to 60 hours
2. average incubation period: 24 to 48 hours
3. vomiting occurs in more than 50% of cases, and
4. stool specimens are negative for bacterial and parasitic pathogens.

When investigating an outbreak likely caused by norovirus, it is important to determine whether the outbreak began from a single source (contaminated food or water) or was spread person to person. Review symptom onset dates and times for all cases. If the initial persons who became ill developed symptoms at approximately the same time, suspect a food or waterborne outbreak and attempt to identify and eliminate the source.

If norovirus is the likely etiologic agent of an outbreak in a facility, immediately recommend infection control measures noted below.

Recommendations for Prevention of Norovirus Transmission

Noroviruses are a highly communicable and measures need to be implemented immediately to prevent further transmission. These recommendations are especially important for institutional and group or public settings, but many also should be used in the home when one or more family members are infected.

1. Implement and promote strict hand-washing policies and provide training.

a. Wash hands *after* using the bathroom, cleaning a restroom, changing a diaper, patient care, or removing contaminated gloves.
b. Wash hands *before* eating, preparing food, or patient care.
c. Wash hands *before* and *after* entering areas where ill persons are living.
d. Recommend the following hand-washing procedure: rub all surfaces of hands with plain soap or one containing an antimicrobial agent, rub lathered hands together vigorously for at least 10 seconds, and then thoroughly rinse the hands under a stream of water.
e. Outside of food service settings, alcohol-based hand rubs (gel or foam) may be a reasonable substitute for soap and water; however, when hands are significantly soiled, they should always be cleaned with soap and water.

Continued page 3

_epi_TRENDS Monthly Posting Alert

To receive monthly e-mail notification of *epi*TRENDS, please register at this website. Choose the option to join the listserve. Enter your name and email address.

http://listserv.wa.gov/archives/epitrends.html

New Phone Numbers

Phone numbers for Communicable Disease Epidemiology have changed and are posted on the CDE website (see box for URL).

CDE Main Number (24-hour)
206-418-5500

2. Disinfect the environment.

a. Thoroughly clean and disinfect bathrooms, excretions (vomit or diarrhea), dining facilities, and potentially contaminated surfaces (e.g., hand rails, door knobs, bed rails, faucet handles, toilet flushers, and anything else touched frequently) with an appropriate disinfectant such as freshly prepared chlorine solutions at concentrations of ≥1,000 ppm (more concentrated than 1:50 dilution of 5.25% bleach), phenol-based compounds, and accelerated hydrogen peroxide products. Chlorine solutions at a concentration of 1,000 ppm need to be applied wet to allow a contact time of 10 minutes. One half cup of household bleach in one gallon of water will provide a 1:32 dilution, and are measurements familiar to most persons. Quaternary ammonium products are not recommended.

b. Instruct staff members with these duties to pay particular attention to their hygiene so they do not become ill.

3. Instruct staff on proper use of personal protective equipment.

a. Wear gloves when assisting ill persons or cleaning contaminated areas.
b. Remove gloves when leaving the room of an ill person and wash hands.
c. Institute a "No Gloves in Hallway" policy for all staff including housekeepers and janitors.
d. Wear gowns and masks if contamination of clothing or splashes to the face with fecal material or vomitus are possible.

4. Limit contact between well and ill persons.

a. If possible, keep ill persons in their own rooms or keep them together for 48 hours after vomiting/diarrhea has ended, or send ill persons home.
b. If possible, restrict ill employees from contact with well persons for 48 hours after vomiting/diarrhea has ended.
c. If possible, designate a separate bathroom for ill persons.
d. Restrict ill persons from spas, pools, lakes, or other shared recreational water.
e. Minimize the number of well persons (i.e., staff) who come in contact with ill persons.
f. Eliminate common events and group activities until the conclusion of the outbreak.
g. In large outbreaks, consider halting new admissions and patient transfers until the outbreak has ended.

5. Implement safe food-handling practices.

a. Exclude ill staff (including volunteers) from food handling for 48–72 hours *after* their vomiting and diarrhea end. Food service staff who have been recently ill with vomiting or diarrhea should not handle food until they can be interviewed or further evaluated by public health professionals.
b. Keep food handlers away from ill persons, areas with ill persons, and potentially contaminated bathrooms.
c. Stop using self-service food bars and don't let residents/staff serve themselves in any manner that might promote direct hand contact with shared foods (e.g., using tongs or other serving utensils for self-service foods).
d. Restrict sharing of communal food/snack items and foods brought from home.

6. Limited transmission through contaminated laundry.

a. Transport soiled linens and clothes in an enclosed and sanitary manner
b. Use the maximum cycle length and detergent to machine wash soiled items and then machine dry.

For More Information

Hand washing and food safety: http://www.foodsafety.gov/%7Efsg/handwash.html
Hand hygiene in healthcare settings: http://www.cdc.gov/handhygiene/

Visit the New Communicable Disease Epidemiology Website

http://www.doh.wa.gov/ehsphl/Epidemiology/CD/default.htm